MARINER OUTBOARDS
MERCURY OUTBOARDS

service bulletin

No. 89-14

WMH Carburetors – 1990 Mariner/Mercury 135 thru 175 Models

Component Location

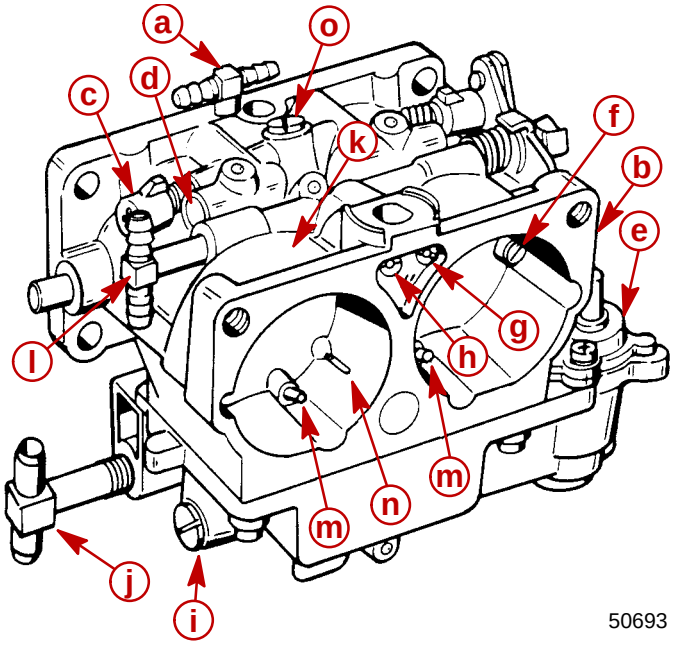


Figure 1.

- **a** - Enrichener Hose Fitting
- **b** - Carburetor Number
- **c** - Idle Mixture Adjustment Screw (two)
- **d** - Air Calibration Screw (behind welch plug)
- **e** - Accelerator Pump
- **f** - Off–Idle Air Jet (two)
- **g** - Back Draft Jet (one)
- **h** - Idle Air Jet (one)
- **i** - High Speed Fuel Jet Access Plug (two)
- **j** - Fuel Line Fitting
- **k** - Carburetor Model (WMH)
- **l** - Thermal Air Valve Hose Fitting
- **m** - Main Discharge Tube Air Inlet (two)
- **n** - Accelerator Pump Discharge Tube (two)
- **o** - Idle Mixture Tube

New Features/Changes

1. Thermal Air Valve Circuit
2. Idle circuit separate from off idle circuit
3. Externally adjustable idle mixture screws
4. Idle air calibration screws
5. Accelerator pump circuit
6. Off–idle holes in bottom of throttle bore
7. One back draft jet per carburetor
8. One float/float bowl per carburetor

Function

Thermal Air Valve Circuit

Eliminates the need to periodically activate the enrichment system to keep a cold engine running after start up. A thermal open/close air valve is mounted on the starboard cylinder head below #3 spark plug and connected to each carburetor idle circuit by a hose. When the engine is below 100° F (38° C), the thermal air valve is closed. When a cold engine is running, the thermal air valve restricts air to the idle circuit causing the fuel mixture to be richer. When the engine warms sufficiently, the thermal air valve opens and allows additional air into the idle circuit causing the fuel mixture to be leaner.

Idle Circuit

Idle circuit is independent of off–idle and high speed circuits. Uses less fuel at idle. Idle circuit consists of externally adjustable idle mixture screws, factory set (behind welch plug) air calibration screws and one idle air jet (Figure 3) for each carburetor (two cylinders).

For best running quality, the adjustable idle mixture screws are set at the factory with the limit tabs pointing straight up. **If adjustment is required, all idle mixture screws must be turned the same amount and the same direction.** Turning the idle mixture screw to the full clockwise limit from the straight up position will lean the idle mixture the equivalent of four (4) jet changes (.008 in.) with the previous carburetors. Turning the idle mixture screws full counterclockwise from straight up position will richen the idle mixture the equivalent of four (4) jet changes (.008 in.) with the previous carburetors.

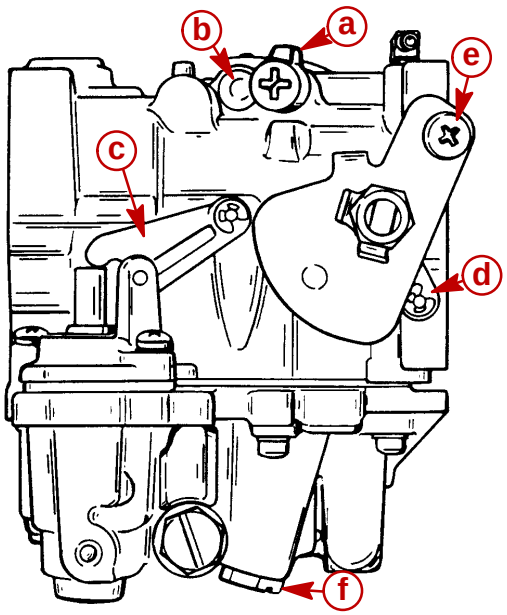


Figure 2.

- **a** - Idle Mixture Screw
- **b** - Air Calibration Screw behind Welch Plug
- **c** - Accelerator Pump Cam
- **d** - Inner LeverAccelerator Pump
- **e** - Lock Screw
- **f** - Off Idle Jet Access

Accelerator Pump

Provides extra fuel for quick throttle opening. Plunger and cam are operated by link rod connected to throttle shaft. Accelerator pump cam should just touch the plunger when the throttle shutters are closed. To adjust, loosen lock screw, move inner lever and retighten lock screw. (Figure 2) Fuel is injected (Figure 3) into each carburetor venturi.

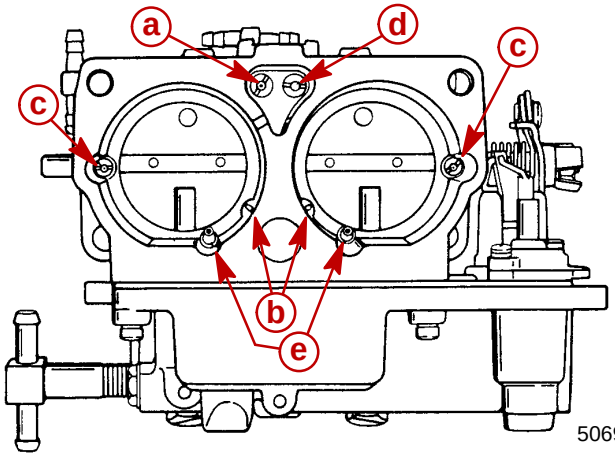
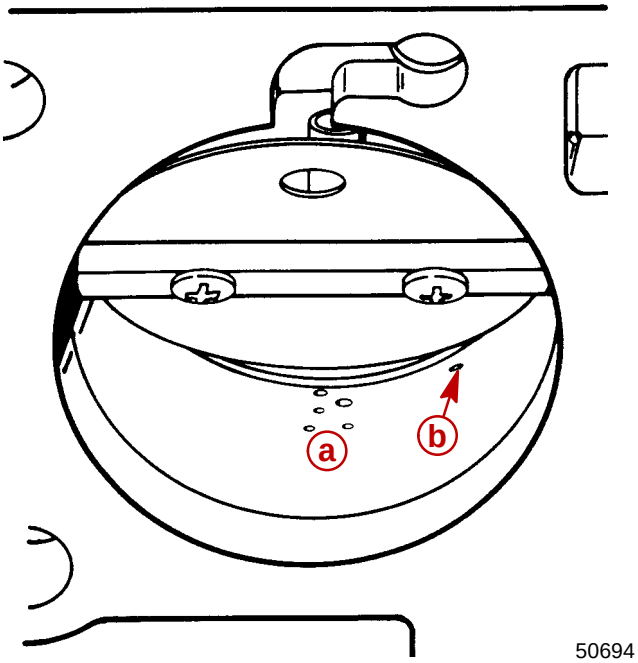


Figure 3.

- **a** - Idle Air Jet (one)
- **b** - Accelerator Pump Discharge Nozzle
- **c** - Off–Idle Air Jet (two)
- **d** - Back Draft Jet (one)
- **e** - Main Discharge Tube Air Inlet

Off–Idle Circuit

Delivers smooth off–idle operation. Off–idle discharge holes (Figure 4) are located in bottom of throttle bore. Each throttle bore has one off–idle tube and one off–idle air jet. (Figure 3)



- **a** - Off–Idle Discharge Holes
- **b** - Back Draft Circuit Port (Port Bore Only)

Figure 4.

Back Draft Circuit

Fuel economy at mid range is achieved by this circuit. Back draft circuit port into float chamber is located in port throttle bore. (Figure 4) A single back draft jet is installed in the air inlet end of the carburetor. (Figure 3)

Float Bowl

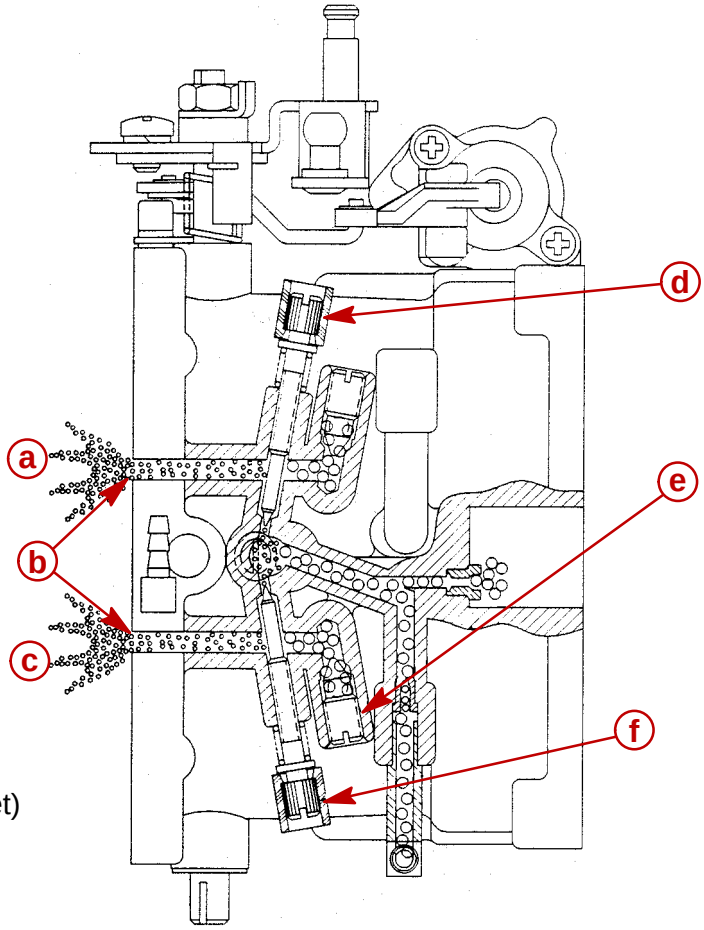
One float/float bowl for both cylinders. Reduces the number of parts from previous design. To set float height, invert float bowl and adjust float tang until top of float is even with top of float bowl.

High Speed Circuit

One main jet and main discharge tube for each venturi. Main discharge tube air inlet is located on the bottom of each venturi. (Figure 3)

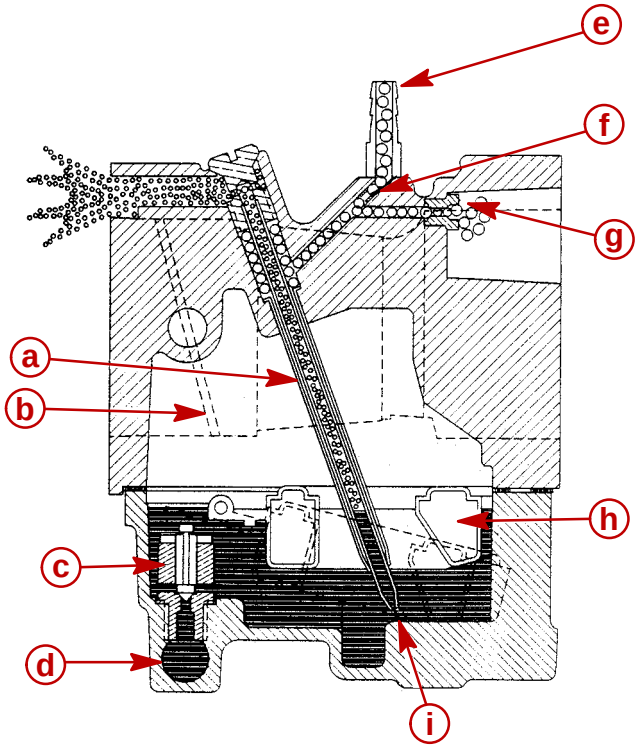
V-6 Carburetor (WMH) with Accelerator Pump

IDLE CIRCUIT



Top View

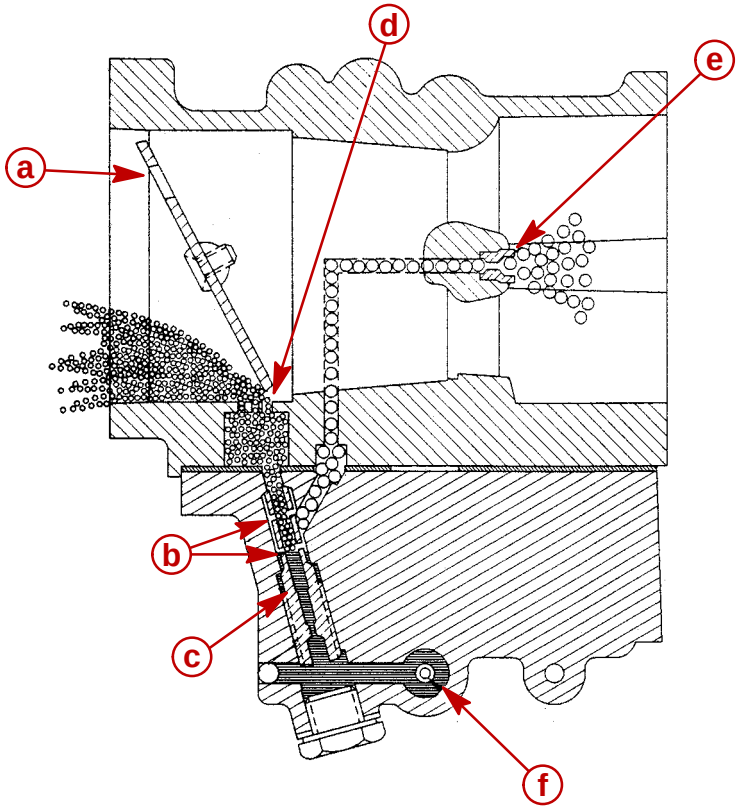
- **a** - To Engine
- **b** - Idle Discharge Ports
- **c** - To Engine
- **d** - Idle Mixture Adjustment Screw
- **e** - Air Calibration Screws (Factory Set)
- **f** - Idle Mixture Adjustment Screw



Side View

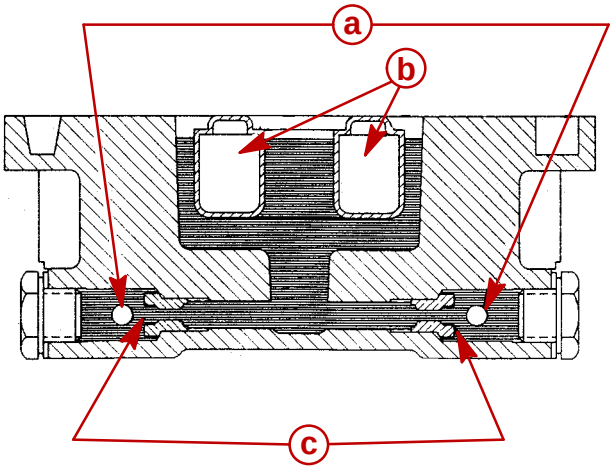
- **a** - Idle Tube
- **b** - THrottle Shutter
- **c** - Inlet Needle and Seat
- **d** - Fuel Inlet from Fuel Pump
- **e** - Idle Air Inlet from Thermal Air Valve
- **f** - Idle Air Inlet Restriction
- **g** - Idle Air Jet
- **h** - Float
- **i** - Fuel In

OFF-IDLE CIRCUIT



Side View

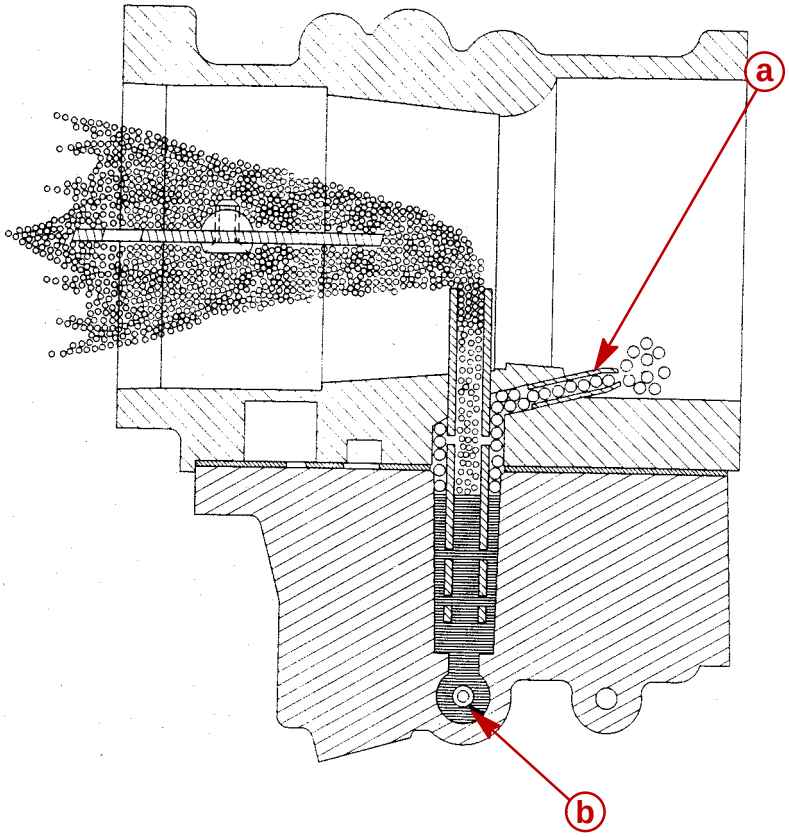
- **a** - Throttle Shutter
- **b** - Off-Idle Tube Crossholes (Air Enters thru these Holes and Mixes with the Fuel)
- **c** - Off-Idle Tube
- **d** - Off-Idle Discharge Ports
- **e** - Off-Idle Air Jet
- **f** - Main Fuel Jet



Rear View

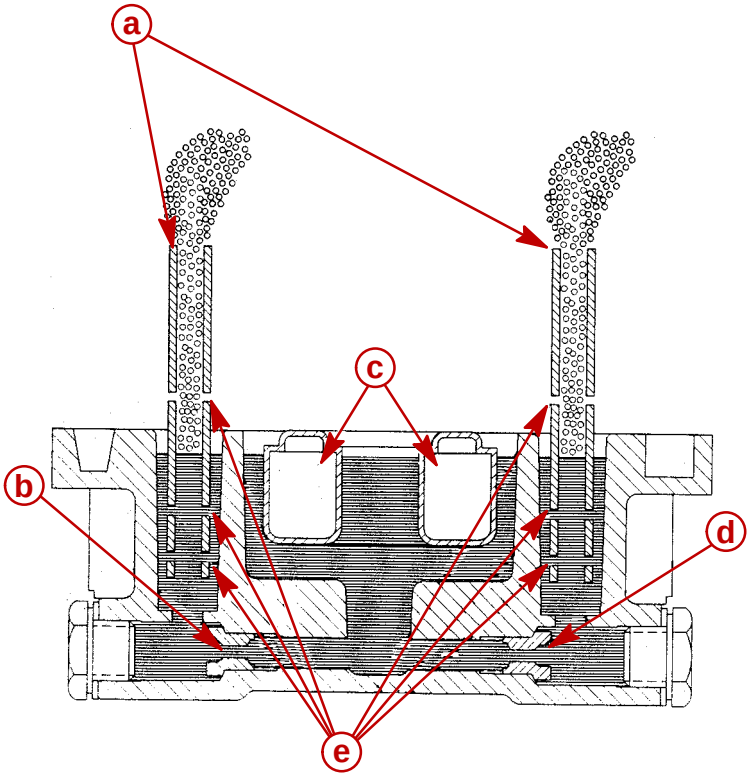
- **a** - Off-Idle Circuit Fuel Inlets
- **b** - Float
- **c** - Main Fuel Jets

HIGH SPEED CIRCUIT



Side View

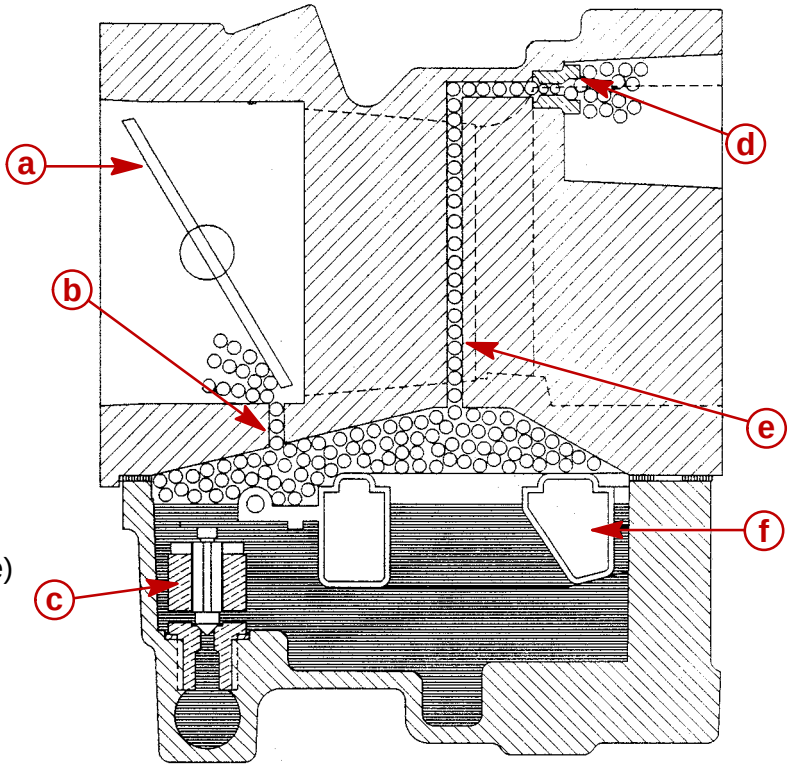
- **a** - Main Discharge Air Inlet Tube
- **b** - Main Fuel Jet



Front View

- **a** - Main Discharge Tubes
- **b** - Main Fuel Jet
- **c** - Float
- **d** - Main Fuel Jet
- **e** - Main Nozzle Discharge Tube Cross-sholes (Air Enters thru these Holes and Mixes with the Fuel)

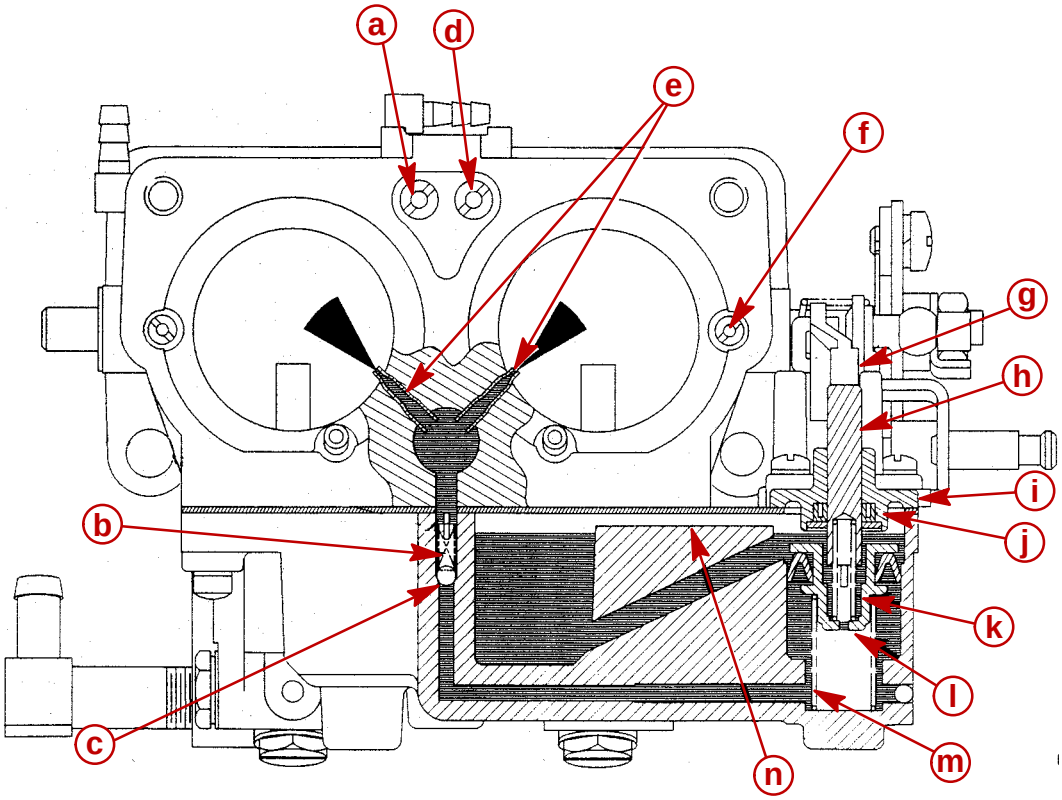
BACK DRAFT CIRCUIT



Side View

- **a** - Throttle Shutter (2/3-3/4 Throttle)
- **b** - Back Sraft Circuit Port
- **c** - Inlet Needle and Seat
- **d** - Back Draft Jet (Float Bowl Vent)
- **e** - Back Draft Passageway
- **f** - Float

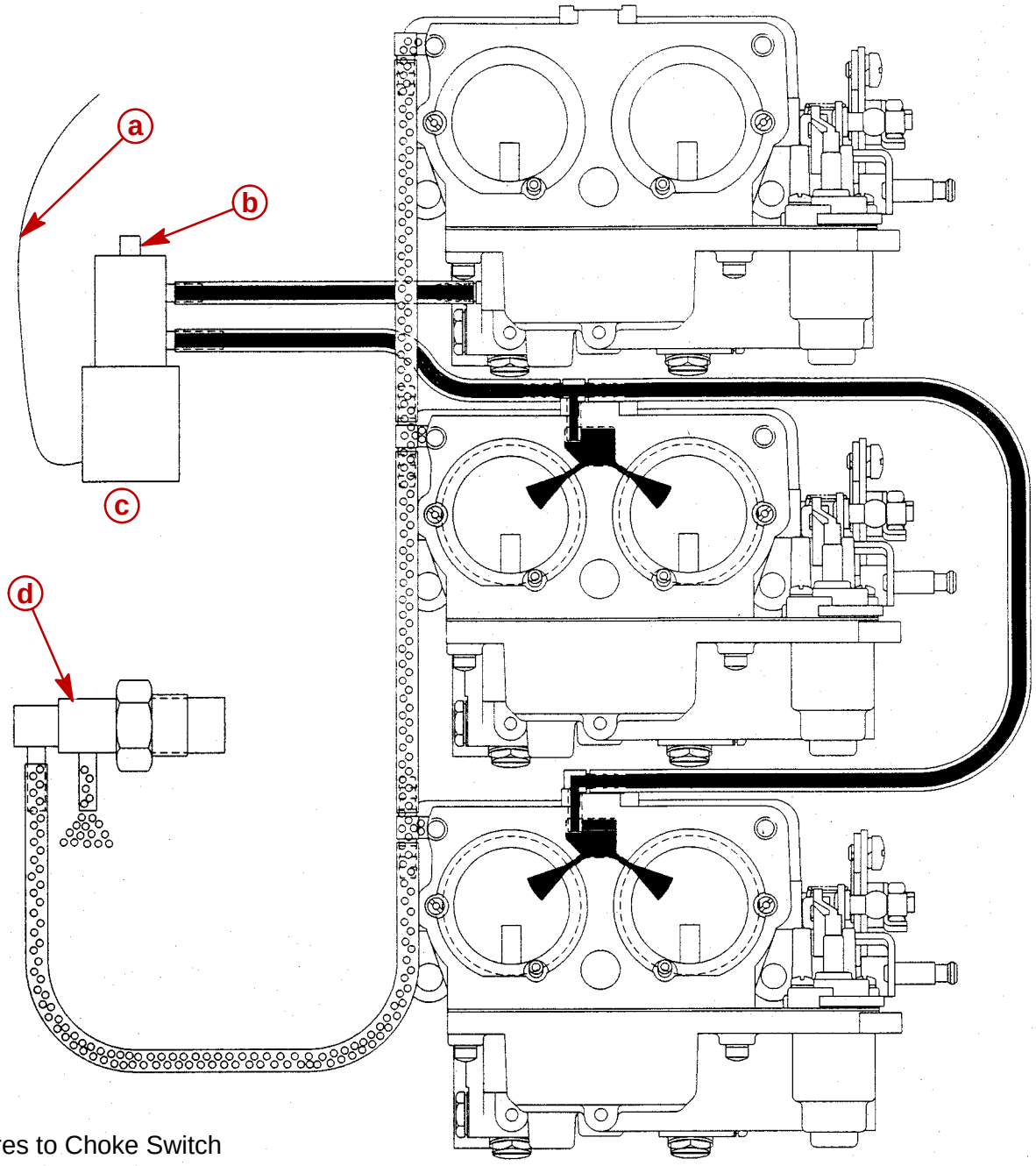
ACCELERATOR PUMP CIRCUIT



Rear View

- **a** - Idle Air Jet
- **b** - Spring
- **c** - Check Ball
- **d** - Back Draft Jet (Float Bowl Vent)
- **e** - Discharge Tubes
- **f** - Off-Idle Air Jets
- **g** - Cam
- **h** - Plunger
- **i** - Cover
- **j** - Seal
- **k** - Overide Spring
- **l** - Cup Assembly
- **m** - Return Spring
- **n** - Air Vent Passage

THERMAL AIR VALVE AND ENRICHENER VALVE CIRCUITS



a - Wires to Choke Switch
b - Manual Operation Button
c - Enrichener Valve
d - Thermal Air Valve (Mounted to Cylinder Head)

Cylinder Head Temperature	Thermal Air Valve State
Greater than 100° F (38° C)	**OPEN** Allows additional air to enter idle circuit thru thermal air valve (leans idle mixture)
Less than 100° F (38° C)	**CLOSED** Does not allow additional air to enter idle circuit thru thermal air valve (richens idle mixture)